What is Tendinopathy ?

Tendinopathy is an overload or overuse injury resulting in tendon degeneration. Whilst previously known as tendinitis it does not typically have an inflammatory component. Tendon injuries account for a significant proportion of sport and workplace related injuries resulting in considerable morbidity.

Treatment Plan/Options

Medical Therapy

- PhotoActivated Platelet-rich Plasma (PAPRP) Injection
- ExtraCorporal Shockwave Therapy (ESWT)
- GTN patches
- Cortisone Injection

Allied Health Clinicians

- Physiotherapy
- Podiatry

Medical Therapy

PhotoActivated Platelet-rich Plasma

Blood is a source of naturally derived healing and anti-inflammatory factors. When muscles tear the resultant bleeding results in a heeling process. Unfortunately tendons - unlike muscle - have a poor blood supply and when they tear they struggle to heel adequately. Platelet-rich Plasma - a concentrated solution of the growth factors found in blood - can be injected under ultrasound guidance into the site of tendon injury, promoting both healing and pain relief.

ExtraCorporal Shockwave Therapy (ESWT)

Shockwave therapy has been used for treatment of tendinopathy since the early 1990s. Originating from a a urology procedure called ‘lithotripsy’ (used to crush kidney stones), it is a safe and non-invasive therapy. Shockwave therapy has shown evidence in promoting pain relief and also tendon remodelling/regeneration.

GTN Patches

Glycerol TriNitrate Patches are used commonly for heart related chest pain. Research has shown that use of GTN Patches promotes tendon remodeling and healing. Some patients will also experience a significant analgesic benefit from GTN Patches.

Cortisone Injection

It may be suitable to use cortisone in the treatment of tendinopathy. Repeat use of cortisone, however, is not recommended as this has been shown to result in a poor outcome.

Allied Health Clinicians

Physiotherapy

A physiotherapist guided strengthening program is essential for a positive outcome. All interventional techniques have been shown to be more effective when used in combination with an appropriate rehabilitation program.

A physiotherapy program is designed to also focus on -

- secondary causes of discomfort and pain associated with tendinopathy - ie. muscular tightness.
- primary musculoskeletal deficiencies that are associated with the onset of tendinopathy.

Podiatry

Biomechanically there a many issues that may cause or aggrevate tendinopathy. Podiatric assessment and adjustment can have a significant role in assisting tendon rehabilitation and preventing recurrence of pain and tendinopathy.

What is PhotoActivated Platelet-rich Plasma ?

Platelet-rich Plasma (PRP) is a growth factor rich medium that is developed from your own blood. It is not synthetic.

Research has shown PRP to be effective in the treatment of many musculoskeletal conditions.

Recent developments of PhotoActivation have been successful in increasing the naturally derived anti-inflammatory mediators within PRP.

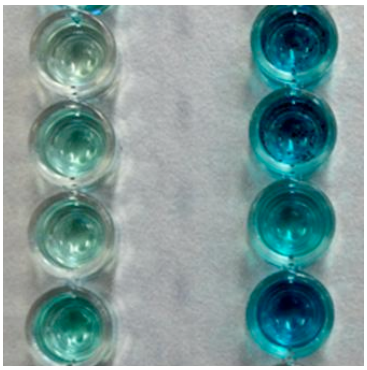


Figure 1. Increased anti-inflammatory mediator post PhotoActivation.
(Reproduced with the approval of Adistem Pty Ltd)

What is Involved ?

PRP therapy involves three injections into the injured area over two weeks.

Patients are required to ***cease taking anti-inflammatory tablets*** one week prior to the PRP procedure.

Patients taking regular aspirin should continue to take this as prescribed by their general practitioner.

Injections are done under sterile conditions, with local anaesthetic and using ultrasound guidance.

On each occasion you will be required to donate blood for generation of the PRP.

Each procedure will take approximately 45 minutes.

It is recommended that you have someone to drive you home after an injection due to some potential residual effects of the local anaesthetic or discomfort from the procedure.

Patients undergoing Platelet-rich Plasma therapy are required to also be actively involved in a supervised rehabilitation program.

Risks

Bleeding/Bruising

Infection

- To reduce chance of infection all injections are done under sterile conditions using ultrasound guidance for accuracy.
- PRP has natural anti-bacterial properties that reduce chance of infection.

Pain/Discomfort

- Injections can be uncomfortable. Where possible a regional nerve block is performed to improve comfort.
- Some people may experience a vasovagal episode during or post injection where they feel lightheaded and sweaty. This is self limiting.

Contra-Indications

Whilst very safe, use of platelet-rich plasma is contra-indicated in the following conditions -

- pregnancy
- cancer
- some bleeding disorders

Evidence

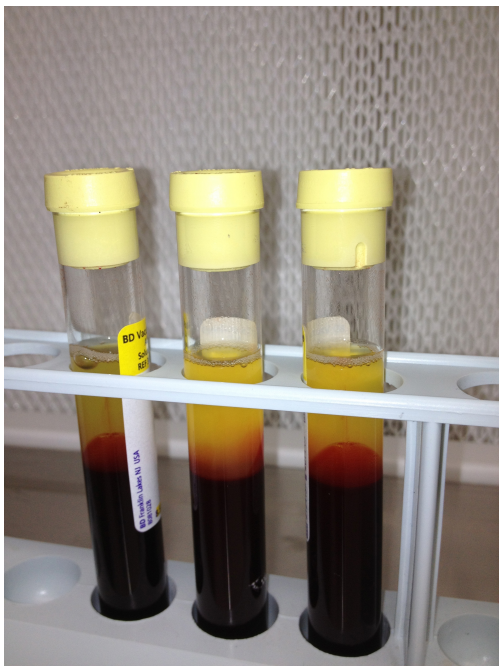
Level 1 scientific research has shown PRP to be effective in the treatment of various musculoskeletal conditions/ injuries. Studies have indicated that PRP achieves better results than cortisone or placebo injections. Results from PRP injection in combination with an eccentric exercise program are also better than doing an exercise program alone.

Research Articles

- Creaney. et al, Growth factor-based therapies provide additional benefit beyond physical therapy in resistant elbow tendinopathy: a prospective, single-blind, randomised trial of autologous blood injections versus platelet-rich plasma injections, Br J Sports Med 2011, Online Publication
- Rabago, et al. A systematic review of four injection therapies for lateral epicondylosis: prolotherapy, polidocanol, whole blood and platelet-rich plasma, Br J Sports Med 2009;43:471-481
- Anitua, et al. New insights into and novel applications for platelet-rich fibrin therapies, Trends in Biotechnology 2006, Vol 24, 5:227-234
- Edwards, et al. Autologous Blood Injections for Refractory Lateral Epicondylitis, The J Hand Surg 2003, Vol 28, 2:272-278

Cost

The cost of PhotoActivated Platelet-rich Plasma is ~ $300. A significant portion of this is covered by medicare. Patients receive a greater rebate (and thus reduced out of pocket) if referred by their regular doctor or another physician. Pensioners have a reduced out of pocket expense.



Post Injection Instructions

Pain Flare

To improve the comfort of the procedure local anaesthetic can be infiltrated at site of the injection. Where possible a regional nerve block is performed.

Some patients may experience a small `flare' of their pain after the local anaesthetic wears off. This can last between 12 - 72 hours.

It is advised that on return to home that you take 2 paracetamol (panadol) tablets. You will be supplied with a script from your treating doctor for stronger analgesia/pain relief if required.

Return to Activity/Work

Patients in low impact work roles are expected to need up to 3 days off work due to potential discomfort. Higher impact jobs that require heavy lifting may need longer. It is advised that patients should not return to their regular work/activities until their pain has returned to their pre-injection level of comfort.

Exercise post Injection

It is advised that patients should re-commence their exercise/strengthening rehabilitation program (physiotherapy guided) when their pain returns to pre-injection baseline levels.

Physiotherapy/Massage

It may be useful to have range of motion therapy and also soft tissue massage in the immediate week after your injection.

extracorporeal shockwave therapy.

What is Extracorporeal ShockWave Therapy (ESWT) ?

Shockwave therapy has been used for treatment of musculoskeletal conditions since the early 1990s. Originating from a urology procedure called 'lithotripsy' (used to treat kidney stones), it is a safe and non-invasive therapy.

Shockwave therapy has shown evidence in promoting pain relief and also tendon remodeling/regeneration.

What is involved ?

Radial Shockwaves are transmitted to the site of injury via a hand-piece held by the clinician. Treatment over the area of injury may cause some initial discomfort. It is not uncommon for patients to develop numbness or heaviness in this area at the time of treatment.

Each treatment will take a duration of approximately 10minutes and 2000-3000pulsed shockwaves will be administered to the area of concern.

Patients typically need 3-5 treatments though improvement can be achieved after a single treatment.

Contra-indications

Whilst very safe, shockwave therapy is contra-indicated in the following conditions -

- pregnancy
- bleeding disorder
- warfarin therapy
- cancer

Evidence

Scientific research supports the use of shockwave therapy in the treatment of tendinopathy, plantar fasciitis and other conditions. Evidence suggests that up to 80% of patients with appropriate injuries will improve with shockwave therapy.

Research Articles

- Rompe, et al. Eccentric Loading Compared with Shock Wave treatment for Chronic Insertional Achilles Tendinopathy, J Bone Joint Surg Am 2008, 90:52-61
- Han, et al. Effect of Extracorporeal Shock Wave Therapy on Cultured Tenocytes, Foot and Ankle International, 30:93-98
- Furia, et al. Extracorporeal shock wave therapy in the treatment of chronic plantar fasciitis and Achilles tendinopathy, Current Opin Orthop 2007, 18:101-111

Cost

The out of pocket expense of a single shockwave treatment is $70.

glycerol trinitrate patches.

What are Glycerol TriNitrate patches ?

Glycerol TriNitrate Patches are used commonly for heart related chest pain. Research has shown that use of GTN patches promotes tendon remodeling and healing. Some patients will also experience a significant analgesic benefit from GTN Patches.

Treatment

1/4 of a patch is placed on the tender portion of the tendon for a period of 24hours. At the end of this period the patch is removed and then a new 1/4 patch is applied.

Side Effects

Common side effects with GTN patches are headache and light headedness. If this occurs then the patch can be cut down to 1/8 of a patch and re-trialled.

If patients have persistent headache not manageable with use of paracetamol or have symptomatic dizziness then use of the patch should be discontinued.

Contra-Indications

GTN patches are contraindicated in :

- pregnancy
- breast feeding
- children
- low blood pressure
- congestive cardiac failure
- cardiomyopathy

Evidence

Scientific research supports the use of GTN patches in the treatment of tendinopathy. Use of GTN patches has shown significant reduction in pain and improvement in tendon function.

Research Articles

- Murrell, Using nitric oxide to treat tendinopathy, Br J Sports Med 2007, 41:227-231
- Paoloni, et al. Randomised, double-blind, placebo-controlled clinical trial of a new topical glyceryl trinitrate patch for chronic lateral epicondylosis, Br J Sports Med 2009, 43:299-302